

### CLAIMS

1. A sensor for determining angular position of a radiating point source in two dimensions, comprising:

- a) a point source of light located in a prescribed space;
- b) a light detector adjacent said space;
- c) a two-dimensional mask interposed between said detector and said space, said mask having a two-dimensional surface pattern thereon formed by a prescribed pattern of frequencies;

- d) whereby light from said source travels through said mask and onto said detector, said surface pattern causing at least one of phase or frequency changes to occur, said changes being used to calculate angular position of said point source of light with respect to said detector in two dimensions.

2. The sensor of Claim 1, wherein said surface pattern includes at least one series of frequencies extending along a line consisting of at least one low frequency, at least one variable frequency, and at least one high frequency.

3. The sensor of Claim 2, wherein said at least one series comprises a first series extending along a first line, and further including a second series extending along a second line and consisting of at least one low frequency, at least one variable frequency, and at least one high frequency.

4. The sensor of Claim 3, wherein said first and second lines are orthogonal.

5. The sensor of Claim 2, wherein said at least one series comprises a first series extending along a first line, and further including a second series extending along a second line.

6. The sensor of Claim 5, wherein said second series consists of fixed low and high frequency components.

7. The sensor of Claim 6, wherein a third series of frequencies is provided along a third line.

8. The sensor of Claim 7, wherein said third series includes variable frequency components.

9. The sensor of Claim 5, wherein said second series consists of variable frequency components.

10. The sensor of Claim 9, wherein a third series of frequencies is provided along a third line.

11. The sensor of Claim 10, wherein said lines are non-parallel.

12. The sensor of Claim 8, wherein said lines are non-parallel.

13. The sensor of Claim 1, wherein said mask and detector lie in parallel planes.

14. The sensor of Claim 1, wherein said at least one of phase or frequency changes comprises phase and frequency changes.

15. The sensor of Claim 2, wherein said at least one of phase or frequency changes comprises phase and frequency changes.

16. The sensor of Claim 15, wherein said low and high frequencies exhibit phase variations.

17. The sensor of Claim 15, wherein said variable frequency exhibits frequency variations on said detector.

18. The sensor of Claim 17, wherein frequency variations are used to make coarse position measurements while phase variations are used to make medium and fine position measurements.

19. A sensor for determining angular position of a radiating point source in two dimensions, comprising:

- a) a point source of light located in a prescribed space;
- b) a light detector adjacent said space;
- c) a two-dimensional mask interposed between said detector and said space, said mask having a two-dimensional surface pattern thereon formed by a prescribed pattern of frequencies, said frequency pattern comprising first and second orthogonal lines, each of said lines having a series of frequencies thereon consisting of at least one low frequency, at least one variable frequency, and at least one high frequency;
- d) whereby light from said source travels through said mask and onto said detector, variations of frequency in said variable frequencies being used to calculate coarse position and variations in phase in said low and high frequency being used to calculate medium and fine position.

20. The sensor of Claim 19, wherein said mask and detector lie in parallel planes.